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An Approach for Trust and IS Engagement in Professional-Orientated Work

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ABSTRACT

This paper addresses profession-orientated work and the professionals' involvement and engagement in design and use of information systems. Two ethnographical studies have been performed within different types of professional organizations. Information systems should will reduce the complexity in the professionals' work, but only if the professionals could trust the usage of information systems. The analysis reveals the importance of the professionals' engagement in information systems design and use in order to trust the systems integrated in the work.

Keywords

Information systems, Professions, Profession Orientated work, Trust, IS Engagement.

INTRODUCTION

More and more work is performed within profession orientated and knowledge intensive organizations (Alvesson, 1993). This situation contributes to the integration of information systems and will be increasingly complex within the many work contexts.

Information systems are often well integrated in the complex work performed by professionals. Knowledge is created in work practices and is shared and transferred between different professions. Information systems are used to support the knowledge integration between different professions in organisations (Alavi & Leidner, 2001).

Profession orientated organizations often consist of different types of professions, e.g. T(hing)-professions prevail in professional work practices devoted to producing, organising and administering goods and services. L(ife)-professions prevail where the practice is devoted to the welfare and health of the people in society (Hellberg et al., 1999). Separate profession types have different characteristics which have various impacts on all professions in different ways. It is not uncommon therefore, that different tensions and barriers arise between the various professions when collaborating within an organisation. These tensions and barriers become more obvious when related to the design and use of information systems, which have to support the collaboration between professions within the work practice.

The aim of this paper is to shed light on how the role of information systems is faced and approached within the different professional cultures as T and L. When planning, implementing and adapting information systems in these professionally orientated organizations there is a challenge in the creating and the keeping of the authority and legitimacy of the systems. Although the information systems will reduce the complexity in the work, if the professionals do not trust the usage of information systems in their work, the complexity and insecurity is increased. This paper is putting forward a reasonable argument for the involvement and engagement in the information systems related to the professional-orientated work practice. Hence, based on two ethnographical case studies, the paper shows that engagement in the information systems is required so that the professions are able to trust in the information systems. This also influences the meaning and the application of information systems in their work practice.

When adopting and adapting information systems it is important to have a soft approach to the information system in order to integrate the knowledge about information systems within the profession orientated knowledge domain. This is to increase the trust of the information systems and the knowledge of the information systems resources within the organisation. Systems development methodologies have to evolve in response to the changes in the domain to which they are applied (Avison et al., 1998).

RESEARCH METHOD

Two different ethnographical case studies have been made, within two different work disciplines (Hammersley & Atkinson, 1995). Both of the disciplines are performed within publicly financed areas. The first study is a study performed within the Swedish Airforce. The work in maintaining the military aircraft JAS 39 Gripen and its information handling has been studied at the Skaraborgs Air Base in Sâtenäs, as well as at Volvo Aero Corporation, the developers of the engine in this aircraft. The second study is a study performed within a health care organization in Sweden, the NU health care. The use of information systems has been in focus in this study. Both of the different disciplines can be characterised by their quite similar work processes. When it comes to aircraft maintenance as well as to health care for people the work process can be described in terms of planning efforts, diagnosing with support of different information sources, planning actions, repair/treatment of faults, diseases, injuries and damages as well as to evaluate the actions taken.

The case study of the aircraft maintenance comprised three different phases. Initially the study was of an exploratory nature with interviews, open-ended observations and studies of internal documents in the field of work. The work of the flight engineers and control engineers was performed at the wing of Sâtenäs. There were also regular discussions with the service engineers and the developing engineers of the support systems at Volvo Aero Corporation. This first phase was performed from 1997 to 1998. This was followed by a phase with interviews, a collection of some secondary material and the attendance of meetings in both organisations. The second phase was performed from 1998 to 2001. The last phase included further observations and more structured and focused interviews. The third phase was performed during 2008. In total 25 personnel were interviewed. During this case study, extended over quite a long period of time, there were frequent visits to the field sites. Material from the maintenance work process was collected by qualitative empirical studies, especially during interviews with both different maintenance professions and executives at the wing of Sâtenäs and at Volvo Aero Corporation and notes were taken during the interviews. During the observations of the maintenance work, fieldwork notes were also compiled. Other sources due to the empirical findings were either attending courses on the construction and maintenance of the aircraft or attending project meetings for the product support system project group at Volvo Aero Corporation.

Within the NU health care the case study comprised two phases. The first phase consisted of the main part of the study and was performed during 1999 to 2000. This study included 21 interviews with doctors, nurses, IT-personnel and ambulance personnel and also observations at five separate times. The interviews were tape-recorded and transcribed, notes were taken during the observations. During 2008 a couple of follow-up interviews were done. A thorough analysis was carried out and all the transcribed material from the interviews was read through two or three times, in order to develop a deeper understanding of the discussions in the interviews.

THEORETICAL FRAMEWORK

Professions and the role of information systems

Since the 1990's the concept on professionalism has been focused on trust within the professions and analyses of professions according to the occupational change and control in the work. The concept of professionalism can be said to explain how occupational related changes can be supported and facilitated (Evetts, 2006). Different phenomena and events in our society affect professions and their characteristics. Professions can both be strengthened and weakened, depending on the different external impacts from society. Information systems are used in many different ways within professions in order to support the work being performed. These information systems are continually changing in different ways and will have constant impacts on the professions.

Professions are often in a position to do the best for the general public and the society, and this is the background for the authority professions have (Phadenhauer, 2006). Profession orientated work is characterised by uncertainty, complexity and instability and it is unique. (Schön, 1991). The profession orientated work is as much about finding the problem as solving the problem. Information systems supporting the complex work have to be designed not to impede the effectiveness in quickly solving complex and critical problems. The work is about solving complex problems through creative and innovative solutions (Alvesson, 1993).

Alvesson (1993) claims that knowledge functions in creating a community and a social identity as well as giving the members of a profession a common language and self-esteem. Knowledge is also important in creating legitimacy and trust in co-operation with other people in society. diLuzio (2006) states that it is the behaviour of the institutionalised within the role of a profession that supports the professions activities. The information systems are required to support the activities in the work place which are performed by the different professions. Moreover, by being involved, the professions can have trust in the information systems used within the work in order to keep their authority. People within professions are intrinsically involved in their work. Work involvement is defined as the degree to which a persons work performance affects his or her self-esteem. The work involvement is also related in the participation of decision-making, which is an important

characteristic within professions. Involvement is an internationalised process of values about the goodness and honesty of work, and this aspect is a characteristic of professionalism as each profession has its own values and codes of practice (Lodahl & Kejner, 1965).

A profession orientated culture represents a shared experience that others do not have. (Starbuck, 1992). A profession has a collegial authority and a common ground and as soon as one has received the required education and training there is trust in using the personal knowledge and experiences within the different complex contexts of the professional work in order to make decisions. In this way the people within the professions are in control of their own work and external rules have a minimal impact (Evetts, 2006). But however, the information systems have an influence in the opposite direction, although they imply that rules, control and follow-up are introduced. Alvesson (1993) mentions the special culture within each profession. Professions' specific cultures can be interpreted as hindering other people to work within these areas of competence. This can have a negative impact on how the knowledge within the professions is spread to other people. Kunda (1992) also stress that cultures within organizations can be seen as common rules, which control cognitive and affective aspects. Cultures have also an impact on attitudes to design and use of information systems, where different cultures can have different attitudes to adopting different information systems (Svensson et al., 2009).

Hellberg, Saks and Benoit (1999) make a distinction between two different types of professions; T(thing)- professions and L(life)- professions. These two types differ from each other in that the differences can have an impact on the use and the design of information systems, as the two case studies are shown. The characteristics of each of these professions is important to highlight in order to adapt the information systems to the context used within these different profession types. T-professions are usually found within a context characterised by usage. This usage stands for providing important materialistic services for everyone. Tansley (1996) claims that the culture within the more technical professions tries to provide the best or the highest satisfaction for as many as possible and that they have the responsibility for the welfare and the security of the society. T-professions related to professional work practices are devoted to producing, organising and administering goods and services, therefore having no close handling of individuals. Each member of the society needs safe products and conditions for their material usage. T-professions can then be said to support the interest of the general public with technological and economical development in the society. The legislation about T-professions is maintained by the educational information in the examination system and titles. Institutional education is an initial entrance ticket for membership within a T-profession. T-professions are based on education and are not regulated by a special legislation. The characteristics of L professions is related to the welfare and the health of people within the society (Hellberg et al, 1999).

Systems thinking and systems approaches within information systems

Systems thinking can be used in situations where complex problems are experienced (Checkland, 1993). It is useful both within T professions in maintaining aircraft in identifying connections between different parts within a fault occurrence as well as within L professions in an emergency health care when different symptoms of a patient could point to diagnosing a disease. A complex system is often interactive in its nature, which can be said both about the aircraft and a human being, as both have parts interacting in complex ways. Systems is consisted of related parts, connected to a whole (Checkland, 1993). The systems thinking focuses interaction between different parts in a system. Interactions in systems are not always easy for humans to understand.

There are two different systems approaches, the hard systems approach and the soft systems approach (Dahlbom & Mathiassen, 1993). The soft systems approach has grown in order to manage social and human contexts. This approach is appropriate to use for systems design where systems will be in use for people where the complexity is high (Checkland, 1993). The soft systems approach is suitable in situations when uncertainty and complexity exist, and the approach involves an experimental strategy for problem solving (Dahlbom & Mathiassen, 1993). The hard systems approach is more suitable for systems design where the problem is well structured and easy to define, as the soft systems approach is more suitable for more complex and unstructured problems. Within the soft systems approach it is of vital importance that different stakeholders within an organization, independent of the type of profession, will, together with systems developers, take part in the systems development process. To be a systems developer is a role, not a person, in that actors from the organization now and then playact the systems developers role (Rose, 2002). User involvement is defined as a need-based mental or psychological state of mind toward systems and its development processes, different from user participation that states the behavior of users during the development process of a system (Hwang & Thorn, 1998).

THE IMPORTANCE OF TRUST IN INFORMATION SYSTEMS

Each human seeking the health care is exposed to a potential risk. If one is being sick there is sometimes the possibility of a wrong diagnosis, or to be treated for the wrong thing and there could be a risk of being made more sick or injured. Unfortunately misdiagnosis happens within health care now and then. The situation within the aircraft maintenance also involves a risk for life, especially for the pilot, but also for the general public that could be passengers or hit by a crashing

aircraft. There has been for example one crash of the aircraft JAS 39 Gripen at a flight show in Stockholm Water Festival in the summer 1993, where many people were in a risky zone.

It is important that the professionals within these work practices are knowledgeable and competent to make the right decisions in different complex situations. It means that right decisions have to be made for the treatment of patients within the health care and the right decisions have to be made for the maintenance of aircraft. The professions are dependent upon many different information systems in performing their work correctly. Without information systems functioning the profession orientated activities would more or less collapse. (diLuzio, 2006). Therefore information systems are a critical part in having access to all different kinds of information and for co-ordinating and communicating this information in an efficient and effective way. The work of the professionals is going to be more technical and has to be adapted to the facilities and limitations of the technology the information systems will give. The work is also being performed at different places in both of the studied cases.

The work of professions is to a great extent influenced by the decisions made by the management about design and use of information systems (diLuzio, 2006). When working within a profession one has the legitimacy to have the license or the commission, to perform the profession orientated work. Even though some organizations management will try to implement routines so that the profession orientated autonomy will be eliminated (Pfadenhauer, 2006). The increasingly formalised requirement on deviation management within health care is also influencing the professions. When more and more documents for routine descriptions will be implemented into the health care, the professionals work will be more and more dependent on the functionality and the infrastructure of the information systems. People within the professions expect that their knowledge and competence will not be used to its full capacity (Pfadenhauer, 2006). The situation for flight engineers is to follow instructions and directives in their work instead of using their own knowledge and competence in the first instance in analysing the faults and in using various maintenance actions. In implementing information systems for different functions, it could be said that there is a kind of de-professionalism going on, especially within health care as the professions are not that much involved.

When the use of information systems are included in the work the L-professions need to feel comfortable and competent in using the information systems available in many different situations. The people's understanding of the systems is important in being able to interact with them (Orlikowski & Gash, 1994). If not, the L-professions could not use the information systems in an efficient way and then they are risking not being able to perform completely within their professions' practice. Therefore, the professions need to trust the information systems in the use in their work practice, even if human mistakes can be never be disregarded in a professional orientated work ethic within critical activities (Perrow, 1984; Reason, 1990; Jönsson, 1999). However, people's engagement is a pre-requisite in having trust in the information systems. Engagement is therefore a desirable condition in profession orientated work. The concept of engagement has both attitudinal and behavioural components as it has an organizational purpose and denotes involvement, commitment, passion, enthusiasm, focused effort and energy (Macey & Schneider, 2008).

IMPLICATIONS OF INFORMATION SYSTEMS ENGAGEMENT

Profession orientated knowledge is important both within L-professions and T-professions. To be able to interpret critical situations in the work is also a great strength within both types of professions. As the cases have shown, a difference in understanding and analysing the problem areas within the different types of professions is about how the information and knowledge is managed in different ways. The T-professions are more disposed to use technical tools compared to L-professions. People within T-professions have a technical education. This will imply that they are more used to work with technical artefacts and they can often understand and use information systems in an efficient way. They are more used to learning about different technical equipment and systems, and then find it relatively easy to familiarise themselves with information systems. As Wilson and Howcroft (2000) claim, the L-professions relate to information systems and information technology with efficiency and control, which is in conflict with the traditional values within health care, being care and humanity. Moreover, information systems and information technology is different from other technical equipment in health care, managed from a separate IT department. Professions within aircraft maintenance are on the other hand, used to working with efficiency and control, therefore the conflict within the use of information systems would not be noticeable within these professions.

People within T-professions intend to see different ways to deal with solutions. If a flight engineer perceives the requirement of a database and an information system in the work, he often starts a design on his own initiative. At different air bases different information systems and databases are being developed by the flight engineers. The systems sometimes have the same purpose, but are designed differently. The systems will be implemented within each air base respectively, and often will be sent to the service engineers, via the control engineers. Then an analysis of the different information systems will be started, in order to investigate which systems are going to be the most appropriate to implement within the whole Air Force.

When design and implementation of information systems are planned within the aircraft maintenance, often flight engineers are involved. Flight engineers have the experience of maintaining, trouble-shooting and taking action, therefore this profession is seen as competent to be included in the developing teams. This is within the T-professions a natural approach and this is followed by the intentions of the soft systems thinking (Rose, 2002).

Normally, T-professions do not perceive any special problems in integrating information systems in their work. However, barriers or tensions for information transference between different professions can occur, whilst the potential to collaborate is increasing when introducing information systems. The design of information systems is performed by great knowledge about the work activities, which implies that requirements and goals from the organization are obvious for the design team. This is an example of high user involvement and engagement in design of information systems and this is characterised by the soft systems thinking (Dahlbom & Mathiassen, 1993; Rose, 2002).

When the design and implementation of information systems are planned within the health care the L-professions are allowed to present their requirements and points of views to the IT-department, then they have an indirect involvement. Nurses then perceive that they are not taken as seriously as the physicians' when it comes to a collection of requirements and wishes before implementing different information systems in the health care organization. The different professions have a different focus on what is important in the choosing of new systems. The physicians have, in support with its profession, a higher authority and power to influence, even if the nurses use the systems to a greater extent and have the best knowledge about the work activities concerned. In this way then it is a risk that the information systems are not being adapted to the work activities as much as they should be.

The L-professions experience large problems in the use of information systems, when they are not competent within the area of the information systems design. Previously, there have been some within the L-professions acting in a IT co-ordinators role in the department, but when new ideas about the control of organizations the management has tried to allocate the scarce resources efficiently (Lines, 2004). IT co-ordinators have been taken away from the health care departments. Instead, all the information systems and information technology competence is accumulated for an IT department. Hence, this leads to the L-professions perceiving a decreased trust in the way the information systems are used. In the larger perspective this could have an impact on the L-professions' assessments and decisions within their profession orientated work. Previously, nurses in different departments developed their own information systems in order to better support the work activities and perform the work activities more efficiently. However, sometimes these systems have been considered so useful that the departments have decided to implement them in the health care work activities. Sometimes, information systems developed by nurses have also been implemented in other health care departments in other areas of the country.

A SOFT SYSTEMS APPROACH SUPPORTING TRUST

The problems perceived by the L-professions when the IT co-ordinators were taken away show a great uncertainty in the ordinary use of the information systems. The uncertainty has also had an impact on the small user participation in systems development projects. The L-professions have a greater need of support in the use of the information systems than the T-professions. The implementation of new information systems often change the way of working for the professions and it implies a certain amount of effort is needed when adapting to new ways of working (Woods, 1987). The T-professions are more involved in the information systems which are to be implemented, because of the large engagement in the design process and the scope of participation. Different people within the L-professions also have a large engagement within the information systems and information technology, this is shown by their own development of some specific information system being adapted to the work activities as well as a large interest in supporting their colleagues in user situations. This engagement for information technology and information systems is hindered within the L-professions, because they are no longer allowed to use their knowledge in the area of the information systems as, participating to a great extent in systems development projects, they develop useful systems of their own or in the role of IT co-ordinators. However, there exist other studies where systems development within health care have been successful, with the participation of the L-professions (Griew et al., 1999).

The L-professions express a great need to have the knowledge and the competence to manage the information systems in their work practice. The knowledge and competence is needed to bridge the gap between the work activities and the related use of the information systems. This is important to ensure that the L-professions maintain a better trust for the use of information systems. The L-professions need this to feel that they control their own work and perform their own work activities. The professions are dependent on the use of information systems in an efficient way in order to perform their work efficiently. The use of information systems is a pre-requisite for information flowing and more communication in the work practice. The T-professions realise that they already have a good command of technology in general and that technology is built-in in their field of work. The culture of different types of professions therefore plays an important role (Kuhlmann, 2006).

In order to have a sustainable self-esteem in the professions their involvement in the information systems related to the work need to be considered. This is even more important in the L-professions than the T-professions, due to the knowledge and competence of information systems. The information systems knowledge and competence should be organized and held within the profession orientated work. Hence, organizations should center designing the work around that to allow people within the professions to perform their work normally. The involvement in information systems in the T-professions also proves the importance of trust in the integration and use of information systems. The commitment to the information systems area is required to keep the self-esteem of people belonging to professions. The success of work performance affects the self-esteem (Rabinowitz & Hall, 1977).

Hard systems thinking and soft systems thinking can respectively be seen as two basic figures of thought (Asplund, 1985). These different ways of thinking of systems have an impact on the professions in the cases studied. The more engineering way of thinking corresponds to the hard systems thinking approach. In a figure of thought it is possible to compare the engineering way of thinking with the T-professions. Technical professions are concentrated on an engineering approach and are thinking of efficiency and effectivity. In the same way it is possible to compare the soft systems thinking approach with the L-professions. L-professions are concentrated on more human thinking, where interpretations are more prevalent. In using the figures of thoughts it could be expected that the T-professions would use the more hard systems approach, which is directed more to the engineering way of thinking of systems. It could also be expected that the L-professions would use the more soft systems approach, which is directed more on human beings and their interpretations and feelings, with the intention of managing the social and human contexts. But in this study it is obvious that the T-professions are using the soft systems thinking approach and that the L-professions are using the hard systems thinking approach, even if the work within the L-professions also is complex and critical. Hence, there exists a kind of a paradox or a contradiction within the different approaches in the cases studied.

Obviously different challenges exist which in their different ways influence the different types of professions. When it comes to trust the largest challenge for the L-professions is to establish sufficient trust for the information systems in use in the work practice. This is important because the information systems are used in the critical work performed by the L-professions. The L-professions need to apply a more soft systems approach in order to develop and use complex information systems that are adapted to the critical work activities. Related to trust the largest challenge for the T-professions is that the organization does not put too high a trust in the preventing systems so that the knowledge and competence of the T-professions will not be fully used.

CONCLUSIONS

This paper has shed light on how the role of information systems is faced and approached within the different professional cultures as T and L. The two cases studied are putting forward a reasonable argument for the involvement and engagement in the information systems related to the professional-orientated work practice. Engagement in the information systems is required so that the professions are able to trust in the information systems. The engagement means to have the professionals both attitudinal and behavioural involved.

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